



Pennsylvania
Grant Request

E-RATE DEPLOYED UBIQUITOUSLY (2011) PILOT PROGRAM
WC Docket No. 10-222

REQUEST SUBMITTAL DATE: Friday, December 17, 2010

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Advancing Learning in Lancaster



TOGETHER WE CAN

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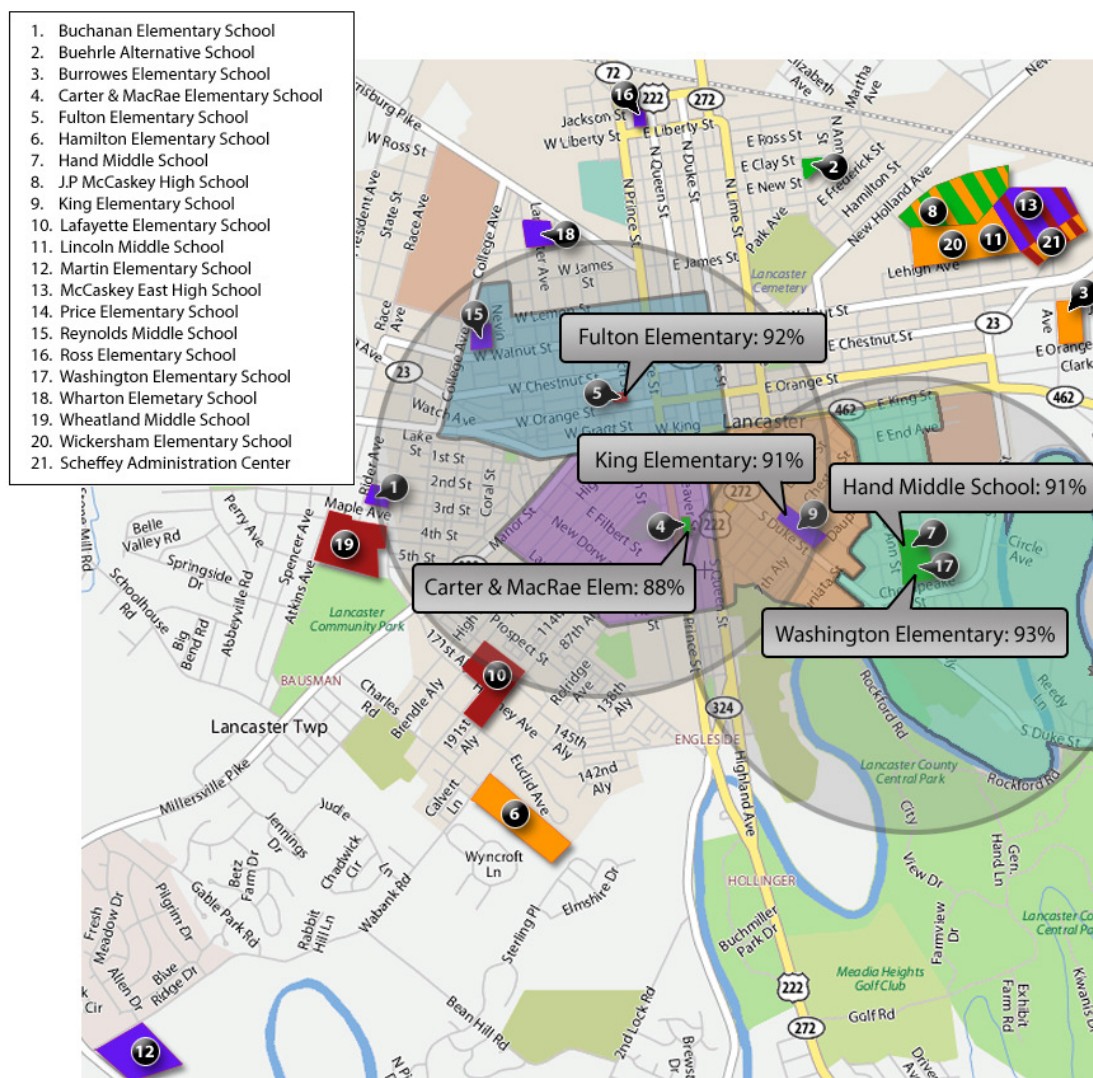
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This project seeks to provide wireless connectivity to the highest concentration of the most economically disadvantaged residents of our community. Lancaster, PA is a mid-size city with a population of 55,439. Racially, 47.0% of the population is Caucasian; 33.2% are Hispanic; 13.4% are African American; 6.38% are Asian/Other. In the year 2009 the estimated per capital income in Lancaster was \$14,996. Most recent figures show an unemployment rate of 7.8%.

We have developed a grant request, detailed below with accompanying material included, for a feasibility study of free wireless access through the school district into the community of its families. This will include wireless equipment from school rooftops and low-cost or free computers for home access.



1.a Nature of the Program

Two years ago the School District of Lancaster identified a need to reach a significant segment of its school population with Internet access and accompanying functionality. In April 2010 we were awarded a grant (enclosed within) to launch a feasibility study titled “Wireless Lancaster,” which is due to conclude in June 2011.

We hope to create a “learning city” which provides access to education without the barriers of walls, native language, and economic circumstances. We would open up the vast resources of the Internet to an underserved urban population. Wireless Lancaster is intended to bridge the “digital divide.” The school district has agreed to allow its school sites to host antennas, repeaters, and related equipment, thereby providing the means for necessary city-wide coverage.

Phase 1 is underway, with a guiding advisory board of select business, education and community leaders providing oversight. An experienced project manager is in place, and we have spent early time in personal contact and research of existing wireless projects throughout the country. Assessments of contract consultants are near completion, so we have some assurances of “best-of-breed” counsel on current equipment and methodology.

Phase 2 will include a pilot installation to test, at minimal expense, the scalability and operational feasibility, technical, and human factors component of the study. A geographic area has been selected (enclosed within) reflecting a concentration of the population most reflective of the underserved. We have purchased several pieces of equipment to test wireless connectivity through several types of buildings, locations and fiber access to determine features, functionality, and scalability.

In addition, the school district has initiated a program wherein families may purchase low-cost Internet-ready refurbished desktop and laptop computers. To date, 200 computers have been distributed out of an anticipated 1,000 available this year, and several hundred more next year.

1.b Maturity of Applicant Wireless Program

See Section 1.a.

1.c Technical Issues

The technical issues for implementing wireless to students off school premises can be topography, available gateways locations, nodes, bandwidth, building composition, distance, user’s eligibility and wireless capability of the user’s equipment.

The area served by the School District of Lancaster (SDL) covers various elevations, buildings, and trees which can make wireless coverage problematic. Elevation can vary up to 100 feet adding to this are trees and buildings that can inhibit signal strength to the user and continuity to the system. Fortunately, the School has various properties throughout the city that will facilitate the placement of gateways and nodes on rooftops or over parts of their property that can overcome the topographic problems.

In the past various organizations have tried to cover or connect every home which has not been

cost effective over large distances. The proposal is to connect “Hot Spots”, cluster homes such as apartments and various areas where high concentrations of students may reside with nodes and gateways. The area where the highest area of Free-Lunch and poverty is essentially concentrated in an area of four or less square miles. Here again the School properties are well situated to serve this area along with Hot Spots such as The Boys and Girls Club, or other civic organizations. The SDL has also discovered some dark fiber in the area. The Lancaster Community Safety Coalitions has agreed to allow some of the excess fiber to be used by the project. This can help in the problem of backhauling information to keep the wireless system bandwidth more intact allowing higher speeds and more users’ satisfaction.

SDL has had a program in the past to sell reconditioned computers to students for \$50. SDL has also teamed up with Ideall which will place free computers to qualifying students

1.d Training

It is the intent of the school district to train selected students, faculty and site administrators, as well as Parent Teacher organization leadership, in the operation of the Wireless Lancaster School Family Computing protocols. This will include necessary computing skills, securely connecting to the wifi network and troubleshooting basic connectivity issues. Training will also include internet safety and district cyber-bullying policies.

It is anticipated that individual students with less common languages will hold training sessions in the native language and provide translation services as part of the training.

1.e Integration with Other Initiatives

Lancaster city is notable in being the nation’s most “watched city” – that is the installed base of 24/7 video coverage both wireless and wired is the most concentrated per capita and per square mile in the country. When the Lancaster Community Safety Coalition instituted this program about 4 years ago they purposely installed a much greater amount of fiber than needed to accommodate other future uses such as that proposed in this grant. This would be available to us, as needed, for our intended wireless program, and the executive director provides wireless outreach expertise in serving on the Wireless Lancaster Advisory Board.

Both foundations supporting the School District of Lancaster would be involved in community wide initiatives – one, the IDEALL foundation, is the enterprise which secured the funding for and is managing the wireless feasibility study.

In addition, county government director of communications and Lancaster city director of public works sit on the advisory board, plus the Chief Technology Officer of the largest hospital.

2.0 Poverty Level

The School District of Lancaster participates in the National School Lunch Program within Provision II, which means every child receives free breakfast and lunch and as such is considered to be economically disadvantaged.

Free and reduced lunch rates per individual school are as follows: Hand Middle School- 91%; Washington Elementary School- 93%; Fulton Elementary School- 92%; King Elementary School -91%; and Carter & MacRae Elementary School -88%.

This qualifies the district for a 90% e-rate discount.

3.0 Financial Need

The School District of Lancaster anticipates a budget shortfall of roughly \$9,000,000 for the following year. This is due to escalating health care costs, rising compulsory contributions to the retirement system, and the continuous addition of unfunded mandates by the federal and state governments. In addition to our high poverty population, we meet the needs of more than 900 homeless students and their families each year. We have also been inundated with a rapidly growing number of refugee students, currently at 137 enrolled with another one hundred anticipated by the end of the school year. While the district is happy to assist these families our resources are stretched thin, and more professionals will be needed to provide these students with the proper supports they need to successfully acclimate into the American culture and society.

4.0 Costs

The costs for this program will be born through a cooperative effort between the School District and the program funded by this grant.

The Grant request will cover the core costs of the WiMax implementation which extends broadband to 1200 homes (in the pilot) and the costs associated with implementation. This pilot will be extensible to cover additional homes and families in the future without requiring restructuring of the infrastructure.

The School District of Lancaster will be providing free, or low cost portable and desktop systems under separate funding to ensure the respective homes can effectively access the system.

The costs requested under this grant are as follows:

Grant Funding Requested			
	Cost	Units	Extended
User Management Operators/Help Desk			\$ 30,000.00
CIPA Filtering	\$ 7.00	1200	\$ 8,400.00
Communication/Training Program			\$ 10,000.00
Monitoring and Maintenance			\$ 10,000.00
Project Management	\$ 100,000.00	1	\$ 100,000.00
Equipment			
WiMax Base System (configured,installed)	\$ 100,000.00	1	\$ 100,000.00
Subscriber CPE	\$ 500.00	1200	\$ 600,000.00
Broadband Wireless Area Survey	\$ 5,000.00	1	\$ 5,000.00
Point-to-Point Connect (Back Haul)	\$ 100,000.00	1	\$ 100,000.00
Total			\$ 963,400.00

5.0 School District Resources

A portion of what would otherwise need to be done to initiate a school district-wide wireless project is the current feasibility student and pilot implementation funded by the PA Department of Community and Economic Development (DCED) grant referenced and enclosed herein. While the School District cannot at this time commit actual dollars to this project, the district can pledge the use of its buildings as sites for antennas, repeaters, and related equipment necessary for city-wide coverage. The geographic distribution of the school sites greatly improves line-of-sight and existing fiber connectivity. We can also allow use of its facilities for training purposes, and provide the intellectual services of our very capable and knowledgeable IT staff. As mentioned above, our two educational foundations are heavily involved in raising funds to promote the welfare of our students. The Lancaster Foundation for Educational Enrichment (LFEE) has raised substantial funding to purchase new computers for the schools in the district, thus allowing more refurbished computers to become available for purchase at low cost by our district families. LFEE is also working to establish a community resource council of local businesses, agencies, organizations, and individuals to devote their time, talent, and treasure to improving educational opportunities for all our students, including access to technology. Our other foundation, IDEALL was responsible for obtaining the initial \$100,000 from the PA DCED for the feasibility study to begin the implementation of wireless connectivity.

The School District will provide Internet Access through the existing agreements, as well as the hosting of the equipment and support for the devices and services necessary for Children's Internet Protection Act (CIPA). Additionally, the School District will provide on-going monitoring and services necessary to ensure the availability and maintenance of the WiMax infrastructure.

Access to both the School District and the Internet will be back hauled from the WiMax base stations to the School District via existing dark fiber available through the Lancaster Community Safety Coalition.

6.0 EDU2011 Impact

The School District of Lancaster is putting great emphasis on off-premise connectivity initially through the **Home Access Center** portion of its web site (www.lancaster.k12.pa.us). Here, parents/guardians may access school, course, calendar, attendance, and grade information on students, among other things. Access to online library resources such as online books, publication databases, and teacher resources will be accessible through the district's Destiny web pages. Also, parent-teacher conferences, public school board meetings, and district events will be accessible to parents and students by utilizing wifi and streaming media technology. The prospect for alliance with the Library System of Lancaster County would be explored through EDU 2011.

7.0 Cost Effectiveness

Providing off-premise connectivity to a spectrum of constituents has long been an issue with the School District of Lancaster. Several options have been considered, including:

- Commercial, Off the Shelf(COTS) WiMax Solutions (e.g., Verizon, Clear)
- COTS Land Line Solutions
- Distributed WiFi Hotspots

7.a COTS WiMax Solutions

The School District considered using local WiMax capabilities which would run in the range of \$50.00/month per device. The proposed solution would be a one-time cost of \$500.00 per **FAMILY** (each connection point will support multiple devices) which can be reutilized in different households as the students matriculate or otherwise leave the system as opposed to a more than \$600/year cost using COTS WiMax.

Additionally, the accounting and management would be significantly lowered, as well as associated costs such as invoice/payments/renewals, not to mention a very real possibility of upward cost inflation at renewal time.

7.b COTS Land Line Solutions

COTS Land Line solutions have the same general cost structure with the additional “last mile” costs of running the lines into existing, and quite often aged housing structures. This is only practicable using existing providers and the total cost/month would exceed the \$50/month cost.

7.c Distributed WiFi Hotspots

Another alternative considered was to have targeted hot spots such as common community areas and targeted housing clusters. This solution would require WiFi access points with a reasonable range of 100-150 feet. To achieve the distribution level desired, it became quickly apparent that the costs of provisioning, back hauling, and then maintaining and supporting such a large number of WiFi access points was impractical both from a cost and complexity point of view.

8.0 Technology Planning Documents

This project supports the strategic objectives of the School District as described in the attached technology plan.

The high-level plan for implementation of this project would proceed as follows:

#	Phase	Description	Time Frame
1	Survey	Conduct a broadband wireless survey to establish	
2	WiMax Base Installation	Install the WiMax Base Stations (2) and back-haul through the existing dark fiber to the School District	
3	Implement Account Management System	Integrate the School's Eligibility information with the equipment/tracking information	
4	Establish Communication/Training Program	Create a communications program to make the multi-lingual constituency community aware of the service and provide the training necessary to user-install the CPE equipment at the site	
5	Establish Help Desk and User Management Support	Establish a 10 hour by 5 day a week help desk to answer questions and service issues related to system, as well as provide	
6	Configure CPE and distribute	Configure the CPE equipment for minimal installation (plug and attach to the window), and distribute the CPE equipment to qualified and signed-up participants.	
7	Evaluation and Adaptation	Evaluate the roll-out continuously, validating both utilization and roll-out rates.	

9.0 CIPA Compliance

In order to comply with CIPA regulations, Internet filtering will be enforced for any node connected to any public WIFI administered by the School District of Lancaster. Only CIPA compliant Internet filters will be used to prohibit nodes from accessing offensive content while connected to the aforementioned WIFI networks. Filtering policies and guidelines will be maintained by administrators assigned to manage these off-site WIFI networks.

10.0 Acceptable Use Policies

The School District asks every potential user to sign an Acceptable Use Policy to ensure that use of the Internet is consistent with the district's state mission, goals, and objectives. For instructional purposes, the internet resources shall be consistent with the curriculum adopted by the school district as well as the varied instructional needs, learning styles, abilities, and developmental levels of students and to facilitate parental interaction with the school and other student academic needs. Users are not permitted to transmit, intentionally receive, order, submit, or publish any defamatory, inaccurate, abusive, obscene, profane, sexually oriented, threatening, offensive, or illegal material, and expressly prohibits certain behaviors and actions, including but not limited to: facilitating illegal activity; accessing obscene or pornographic material or child pornography; inappropriate language or profanity; impersonation of another user, anonymity, and pseudonyms; and more.

11.0 School Information

The School District of Lancaster is located in Lancaster, PA and consists of the municipalities of Lancaster City and Lancaster Township.

The Schools that will take part in this project include:

The School District of Lancaster (entity # 125812) is located in Lancaster, PA and consists of the municipalities of Lancaster City and Lancaster Township.

The Schools that will take part in this project include:

Washington Elementary School (entity #18766)
545 S. Ann Street

Carter and MacRae Elementary School (entity #18782)
251 S. Prince Street

Fulton Elementary School (entity #18777)
225 W. Orange Street

King Elementary School (entity #18751)
466 Rockland Street

Hand Middle School (entity #18750)
431 S. Ann Street

All are located in Lancaster City and are concentrated around the S. Duke Street area.

The School District of Lancaster is an independent urban school district located in otherwise rural Lancaster County. The district serves 10,984 students in grades K-3 to 12 housed in thirteen elementary schools, four middle schools, three high schools, one alternative school, and one early childhood center. Of these students, 57.6% are Hispanic, 20.7% are African American, 16.9% are Caucasian, and 4.8% are Asian/American Indian/Multi-racial/and Other. English Language Learners make up roughly 18% of our student body, and another 18% are considered Special Education. Though we have made recent academic gains, three of our elementary schools are in some type of school improvement of corrective action, as are all of our middle schools and two of the three high schools. Recent student/parent surveys indicate that about 30% of the school population has no home Internet access, with the greatest percentage being in the poorest households and those with non-English speaking parents/guardians.

It is with this in mind that we have chosen Fulton, Washington, Carter & MacRae, and King

Elementary Schools, along with Hand Middle School, as our targeted schools. They are all located within some of the poorest sections of the city.

School	# of Students	Hispanic	African American	Caucasian	Asian & Other
Washington	574	433 (75.4%)	113 (19.7%)	22 (3.8%)	6 (1.1%)
Carter & MacRae	339	233 (68.7%)	77 (22.7%)	21 (6.2%)	8 (2.4%)
Fulton	419	252 (60.1%)	82 (19.6%)	63 (15.0%)	22 (5.3%)
King	590	445 (75.4%)	115 (19.5%)	24 (4.1%)	6 (1.0%)
Hand	508	371 (73.0%)	107 (21.1%)	25 (4.9%)	5 (1.0%)

Washington , Carter & MacRae, and Fulton serve students in grades K4 to 5; King serves students in grades K3 to 5. Hand Middle School houses students in grades 6 – 8. There are approximately 110 teachers working with students in these schools.

Technology is used throughout the curriculum, with students utilizing the schools' Media Centers (formerly known as "libraries") to perform research, work on group projects, read and study, compose essays and reports, and do self-paced learning and testing. A goal of the district's technology plan is to "involve parents in supporting and monitoring their child's progress toward meeting high expectations, including graduation, academic achievement, and attendance." Toward this end we would use technology to engage and motivate parents and increase their involvement and support. All community members would have easy access to information that gives a clear, straightforward picture of how well the school is serving all of its students, including those from every income level, ethnic group, and racial background. Some of the key pieces of information include our school's graduation requirements, graduation and drop-out rates, and student performance on state tests. In addition to providing data for parents through **Home** Access Center, our district website will have a site for parents and community members.